Left Main Bifurcation PCI with Impella Support in an Elderly Patient

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[Target Lesion] Left main bifurcation with severe calcification extending to LAD and LCX ostia

[Strategy] Protected PCI with Impella support, dual Rota ablation, and two-stent crush technique

[Final Result] Successful LM bifurcation PCI with TIMI 3 flow, hemodynamic stability, and no access site complications

Case Body

An 80-year-old female (BMI 26) with a history of **type 2 diabetes mellitus**, **hyperlipidemia**, and **hypertension** presented with weeks of exertional chest tightness despite optimal medical therapy. ECG showed sinus rhythm without ischemic changes. Myocardial perfusion imaging revealed a reversible defect over the anterior wall with a total perfusion deficit of 10%. Transthoracic echocardiography demonstrated preserved LV systolic function (LVEF 60%) and grade II diastolic dysfunction.

Diagnostic angiography showed a heavily calcified **95% LM stenosis** extending to both LAD and LCX ostia. LAD had 99% stenosis proximally and 90% mid-segment stenosis. RCA had segmental 70% and multiple distal critical stenoses. Syntax score was 40. PCI was chosen after patient and family declined CABG.

Impella CP device was inserted for hemodynamic support. LCA was engaged via EBU 3.0x7Fr catheter. A SUOH-03 wire crossed to LCX-D, and pre-dilation was performed with a 2.0x20 mm balloon. IVUS was attempted but could not cross the lesion due to severe calcification. Rotational atherectomy was performed at LM-LCX using a 2.0 mm burr over a Rota-Floppy wire delivered via Caravel microcatheter.

The LM-LAD lesion required reverse wire technique using Fielder FC, followed by a second Rota ablation with a 1.25 mm burr due to thick calcium. Transvenous pacing was initiated due to bradycardia during Rota. Post-ablation balloon dilatation was performed with a 2.25x15 mm NC balloon at 12 atm.

The LAD was stented with Onyx 2.25x22 mm DES, inflated to 6?16 atm. This was crushed with a 3.5x12 mm NC balloon. LM-LCX was then stented with Onyx 3.5x15 mm DES at 11?12 atm. LAD was rewired with Sion Blue supported by a Crusade R catheter. Stent struts were opened using 1.5x10 mm BC and 2.5x15 mm NC. LAD-P was post-dilated with a 2.5x15 mm NC balloon at 10 atm. LM-LAD segment was further optimized with the same balloon at 12?18 atm.

Final kissing balloon inflation with 3.5x12 mm NC (LCX) and 2.5x15 mm NC (LAD) yielded excellent angiographic result with TIMI 3 flow. Impella was removed under stable vitals. Femoral access site was closed with dual Perclose without hematoma or bleeding.

Conclusion:

Severe CAD with triple vessel disease, successfully treated with protected LM bifurcation PCI using dual rotational atherectomy, DES implantation with crush technique, and optimal hemodynamic support.